

the Judiciary, at 7 (Apr. 18, 1994) ("The Commission's actions in the international arena are intended to fuel U.S. economic growth through the creation of new businesses abroad for U.S. companies by promoting worldwide development of new wireless technologies and infrastructure development").

GLOBALSTAR provides an excellent example of these potential economic benefits. As the Commission is aware, the GLOBALSTAR system will operate in other countries through authorized service providers which will obtain the necessary licenses, purchase and install equipment, and market the service to foreign subscribers.¹⁰ Substantial foreign revenues will be attained by LQP from license fees, leases, technical assistance and royalties over the operating life of the system. Moreover, U.S.-made computers, terminals, displays, software, antennas and transmission equipment designed for the GLOBALSTAR system will be sold to foreign service providers to equip their network control and operations centers.

The GLOBALSTAR system will also license manufacturers of subscriber equipment to encourage a strong domestic manufacturing

¹⁰ On March 24, 1994, LQP announced that it had obtained investments for the GLOBALSTAR system from some of the world's leading telecommunications service providers and equipment manufacturers. In addition to investing in GLOBALSTAR, these entities have contracted to provide GLOBALSTAR service in 33 countries, including 14 countries in Europe, eight in Asia, five in Africa and six in North and South America. Investors in the system include: Alcatel Spacecom, Hyundai/DACOM, Space Systems/Loral, Inc., Alenia Spazio U.S.A., Inc., AirTouch Communications and Vodastar Limited. LQP expects that Deutsche Aerospace A.G. will also participate; arrangements for its investment are pending.

base. Shipments of U.S.-made user and gateway equipment will result. Once licensed, GLOBALSTAR will provide a source of international business for numerous industrial sectors in the United States.

As these prospects indicate, LEO technology could provide a significant economic benefit to United States industry. While other countries' PTTs and administrations have considered development of LEO systems, no country has advanced as far toward making a LEO system an operational reality as has the United States. Accordingly, it is in the public interest for the Commission to move forward rapidly to ensure that the United States is the leader in deploying this new technology.

B. LQP Supports Coverage Standards for MSS Above 1 GHz.

1. Global. LQP supports the Commission's proposal to impose a global coverage standard for MSS Above 1 GHz. NPRM, ¶ 23; see Proposed 47 C.F.R. § 25.143(b)(2)(ii). Global coverage would provide direct benefits to domestic subscribers by enhancing anytime, anywhere calling capability.

However, the Commission's proposed standard in Section 25.143(b)(2)(ii), requiring coverage of all but polar regions, is not completely consistent with this goal. There is no specific rationale for the Commission's requirement of coverage based upon service to 80° North and South latitude. There are no populated land masses above or below 72° latitude.

Adoption of this all-but-polar standard may inject system costs disproportionate to service benefits. By requiring system configurations to "serve" near-Arctic and -Antarctic regions, the Commission may necessitate decreased service to more highly populated regions, coupled with increased costs resulting from a particular inclination of satellite orbit or the addition of satellites to the constellation. In either event, costs, whether in the form of degraded service and/or increased prices, would be borne by subscribers not located in, and generally not travelling through, Arctic and Antarctic regions. The detriments of such a "location-based" requirement outweigh any possible (and as yet completely unspecified) benefits.

Based on these concerns, LQP recommends that the Commission recognize the limits of the populated continents, and territorial waters, at 75° North and South Latitude in applying any global coverage standard. Proposed Section 25.143(b)(2)(ii) should be revised to read:

(2) Technical Qualifications: In addition to providing the information specified in (b)(1), each applicant shall demonstrate the following:

(ii) that the proposed system is capable of providing mobile satellite services to areas of the world between 75° N.L. and 75° S.L. at least 75% of every 24-hour period, i.e., that at least one satellite will be visible above the horizon at an elevation angle of at least 5° for at least 18 hours a day.

2. 50-State Coverage. LQP supports proposed rule Section 25.143(b)(2)(iii) requiring MSS systems to provide voice service for all 50 states. NPRM, ¶ 24. Globalstar has been designed to

provide service to CONUS, Alaska, Hawaii, Puerto Rico and the Virgin Islands.

The Commission's proposed rule is consistent with its recognition that the need for MSS systems is:

predicated upon the statutory demand for universal communications service, and upon the simple fact that satellite service can be ubiquitous MSS proponents point out that only MSS can provide a service which is truly universal and is not dependent upon geographic location They further state that MSS can provide high quality service where no service would otherwise exist -- for example, to the 2% of the population of the contiguous United States (CONUS) who live in areas too remote, too rugged, and/or too sparsely populated to justify construction and development of terrestrial systems -- some 5.7 million people.

Land-Mobile Satellite Service, 50 Fed. Reg. 8149, ¶ 4 (Feb. 28, 1985). This rule is also consistent with the Communications Act mandate that the Commission develop "Nation-wide, and world-wide, wire and radio communications service with adequate facilities at reasonable charges" for all the people of the United States. 47 U.S.C. § 151. The proposed requirements that MSS systems provide service to all 50 states promotes the statutory goals for "world-wide" and "Nation-wide" service and should be adopted.

Section 25.143(b)(2)(iii) includes a requirement of providing service "on a continuous basis." The Commission has recognized that the ability of an MSS system to provide "continuous" service can be impaired by obstructions and propagation phenomenon. NPRM, at 14 n.50. Another source of impairment which should be taken into account in assessing "continuous" service is satellite failures; while remediable,

such failures may impair "continuous" service. The Commission's standard for service "on a continuous basis" must, therefore, be flexible either in the definition or in application to account for satellite failures.

C. A Spectrum Efficiency Standard Would Improve MSS.

The Commission requested commenters to propose other technical requirements for MSS systems, and suggested that it may adopt "a rule that requires MSS Above 1 GHz systems to contain or operate simultaneously in the United States a minimum number of channels for mobile services as a means of achieving maximum efficiency." NPRM, ¶ 25. LQP fully supports the principle underlying a "spectrum efficiency" requirement and proposes herein a new Section 25.143(b)(2)(v) to achieve the benefits of such a rule.

The Commission has taken the position that "spacecraft design decisions" should be left to applicants so that they can tailor their systems "to meet the particular needs of their customer base." NPRM, ¶ 11. LQP does not disagree with this premise. However, failure to monitor spacecraft design can lead to the implementation of relatively small, inexpensive and inefficient systems which cause as much interference as larger, more sophisticated systems. For example, a small CDMA system with a few satellites and one beam over CONUS could be as much of a limitation on capacity in shared CDMA bandwidth as a much larger system, with multiple beams over CONUS.

A spectrum efficiency standard could avoid situations where an inefficient system actually impairs service to the public. With respect to CDMA systems, the principal source of spectrum inefficiency is use of fewer beams on the satellite, for the following reason. The number of channels available within a single beam of any given system is restricted by specified power limits. The power limits remain the same whether there are 1000 users in a single beam or 500.

If each of multiple operators had only one beam encompassing all of CONUS, then the users of all the MSS systems operating in CONUS would fall within each other system's beam, and interference from one system to another would be constant across all of CONUS. If on the other hand, each operator had two beams over CONUS (e.g., one in the east, and one in the west), and users were evenly distributed, then, in theory, only half of each system's users would fall within each beam. But, the same power limit would apply in each beam, thereby doubling the number of available channels in CONUS for all systems.

In practice, the subscribers for any given system are, of course, not uniformly distributed. Thus, the more beams put down on CONUS by multiple operating systems, the more likely it is that the subscribers of one system will not be encompassed within any given beam of another system. This nonuniform distribution of users actually serves to increase the capacity of any one system by reducing the amount of intersystem interference on a per beam basis. The users in the reduced interference beam would

not require as much power in the transmitter to overcome such interference, and could, therefore, handle more of its own users in the beam within the specified power limits.

In short, a spectrum efficiency standard would force system operators to construct systems in a manner of their own choice which would have the effect of improving the capacity of all operating systems, thereby improving service to the public. By requiring systems to attain at least 1500-2000 voice channels over CONUS, the Commission could ensure sufficient efficiency to avoid serious service impairments.

Accordingly, LQP recommends that the Commission adopt the following proposed new Section 25.143(b)(2)(v):

(2) Technical Qualifications: In addition to providing the information specified in (b)(1), each applicant shall demonstrate the following:

...
(v) that the proposed system is capable of providing at least 1500 mobile voice channels over the Continental United States.¹¹

D. The Commission Should Apply the Domestic Fixed-Satellite Financial Qualification Standard.

The Commission correctly proposes stringent financial standards for MSS applicants. Strict financial qualifications will ensure that under-financed applicants are not licensed to use spectrum which will lie fallow or to delay the coordination

¹¹ The use of CONUS is intended only for the measurement of spectrum efficiency within a relatively compact area, and does not imply any limitation on the 50-state coverage standard of Section 25.143(b)(2)(iii). Alternatively, a rule specifying a maximum single beam coverage area could be used.

process, denying well-financed licensees the opportunity to put the spectrum to use.¹² Therefore, LQP supports the Commission's proposal "to adopt the same financial showing that is required in the domestic fixed-satellite service."¹³ NPRM, ¶ 27.

The Commission, however, should clarify an ambiguity in the NPRM with regard to its financial standard. In the text of the NPRM, the Commission articulates the financial standards as requiring applicants to provide "evidence of uncommitted current assets or irrevocably committed debt or equity financing sufficient to meet the estimated cost of constructing all planned satellites, launching them and operating the system for the first year." NPRM, ¶ 27 (emphasis added). Neither the proposed rules nor the existing Domestic Fixed-Satellite (DOMSAT) rules require evidence of "uncommitted current assets."¹⁴

The proposed rule (Section 25.143(b)(3)) references subsections (c) and (d) of Section 25.140 of the Commission's

¹² As the Notice recognizes, these concerns arise from Commission experiences in related areas. On several occasions the Commission has granted licenses to under-financed applicants which ultimately do not launch and operate. See, e.g., National Exchange Satellite, Inc., 7 FCC Rcd 1990 (1992); Geostar Positioning Corp., 6 FCC Rcd 2276 (CCB 1991).

¹³ The financial qualifications for satellites in the domestic fixed-satellite service appear at 47 C.F.R. § 25.140 and In the Matter of Licensing Space Stations in the Domestic Fixed Satellite Service, 58 RR 2d 1267 (1985), recon. denied, 61 RR 2d 992 (1986).

¹⁴ In licensing Domestic Fixed-Satellite operators, the Commission relies on current assets as reflected on the applicant's balance sheet. See, e.g., Satellite Business Systems, 103 FCC 2d 856 (1985); RCA American Communications, Inc., 103 FCC 2d 852 (1985); Alascom Inc., 103 FCC 2d 527 (1985).

Rules (which are the DOMSAT rules concerning financial qualifications) as defining the financial qualification standard for MSS Above 1 GHz. Those rules do not contain an "uncommitted current assets" test. Indeed, use of an uncommitted assets test was expressly rejected in the DOMSAT proceeding. See Licensing Space Stations in the Domestic Fixed-Satellite Service, 58 RR 2d 1267, at ¶ 13 (1985). Rather, the Commission determined that it was "more practical simply to require applicants to demonstrate sufficient current assets or operating income to cover the cost of the proposed system."¹⁵ Id. Further, the Commission rejected proposed requirements that specific assets be earmarked to finance a proposed system or that an express commitment be provided that funds would be available for such financing. Such requirements, the Commission found, "provide[] little additional assurance that the system will in fact be built." Id. Instead, the Commission found that sufficient assurance existed where the applicant: (1) had sufficient assets to finance the project; and (2) had evidenced its commitment to the project by investing substantial amounts of capital to prepare the application. Id.

The Commission's rejection of an "uncommitted assets" test was sound policy which should be followed here. MSS applicants have committed and continue to commit substantial resources, both technical and monetary, in preparing their applications,

¹⁵ For purposes of Section 25.140, current assets need not be balanced against current liabilities. DOMSAT, 58 RR 2d 1267, at ¶ 11. Operating income is defined as operating revenues less operating expenses. Id. at ¶ 13.

participating in the negotiated rulemaking and conducting technical studies to provide information to the Commission in these, prior, and related comments. This commitment of resources, coupled with a demonstration that the applicant has sufficient current assets and operating income to support the project, is ample proof of a commitment to build the system. Moreover, the need for the funds to construct, launch and operate the systems will arise several years in the future; it is impractical and unnecessary to require applicants to earmark specific funds now for such expenditures. The Commission therefore should clarify the ambiguity in the NPRM by adopting, without alteration, its long-standing and effective DOMSAT policy.

The NPRM's proposals otherwise track the DOMSAT requirements. These proposed rules have been applied successfully with regard to domestic satellites. They should work equally well for MSS Above 1 GHz. Specifically, MSS applicants should be permitted to demonstrate sufficient current assets and operating income to cover the cost of the proposed system by submitting an audited financial statement or balance sheet current for the last fiscal year. See 47 C.F.R. § 25.140(d)(1); DOMSAT 58 RR 2d 1267, ¶ 11 n.20. In its DOMSAT proceeding, the Commission defined "current assets" as "cash plus other assets reasonably expected to be realized in cash or sold or consumed during a normal operating cycle of a business." Id. at ¶ 13 n.24. The same definition should be applied to MSS.

E. Restrictions on Licensee Eligibility Are Lawful.

The Commission's decision to impose eligibility requirements for MSS Above 1 GHz is consistent with the goals of the Communications Act and is well within the authority of the Commission. See, e.g., United States v. Storer Broadcasting Co., 351 U.S. 192 (1956). As the Supreme Court noted in Storer, setting eligibility criteria by rulemaking is not inconsistent with the hearing requirement of Section 309 of the Act as interpreted in Ashbacker Radio Corp. v. FCC, 326 U.S. 327 (1945). See also Aeronautical Radio, Inc. v. FCC, 928 F.2d 428, 438-40 (D.C. Cir. 1991); Florida Institute of Technology v. FCC, 952 F.2d 549, 550 (D.C. Cir. 1992).

Such criteria may be adopted even when there are applications on file prior to adoption of the eligibility rule. "The filing of an application creates no vested right to a hearing; if the substantive standards change so that the applicant is no longer qualified, the application may be dismissed." Hispanic Information & Telecommunications Network, Inc. v. FCC, 865 F.2d 1289, 1294-95 (D.C. Cir. 1989) (affirming rule adopted by FCC to implement a preference for local ITFS applicants after a cut-off date had expired and applications from nonlocal entities had been filed); see also MSS Tentative Decision, 6 FCC Rcd 4900, 4903 (1991). As the D.C. Circuit stated in HITN, the right to a comparative hearing embodied in Section 309 of the Communications Act "does not preclude the FCC from establishing threshold standards to identify qualified

applicants and excluding those applicants who plainly fail to meet those standards."¹⁶ 865 F.2d at 1294-95. Once the eligibility standard is established, and existing applicants are given an opportunity to file conforming amendments, a non-conforming applicant has no hearing rights because failure to meet the Commission's threshold requirements means it is not a bona fide applicant within the meaning of Ashbacker.¹⁷ See also FCC v. National Citizens Committee for Broadcasting, 436 U.S. 775 (1978); Radio-determination Satellite Service, 104 FCC 2d 650, 663-65, ¶¶ 22-25 (1986) (imposing financial requirements on entities with pending applications).

III. THE COMMISSION'S SPECTRUM SHARING PROPOSAL PROVIDES A WORKABLE FRAMEWORK, BUT REQUIRES MODIFICATION IN ORDER TO BECOME AN ACCEPTABLE PLAN FOR LICENSING LEO MSS SYSTEMS.

In the interest of prompt resolution of this proceeding, LQP can support the basic outline of the Commission's proposal for

¹⁶ Unlike the consortium requirement adopted for the AMSC proceeding, see MSS Licensing Procedures, 7 FCC Rcd 266 (1992), appeal dismissed sub nom. Aeronautical Radio Inc. v. FCC, 983 F.2d 275 (D.C. Cir. 1993), the technical and financial standards proposed for MSS Above 1 GHz are clearly the type of eligibility requirements which the Commission has imposed in the past on satellite and other services. See, e.g., Radio-determination Satellite Service, 104 FCC 2d 650, 663-67 (1986) (adopting technical standards and financial qualifications for RDSS systems).

¹⁷ It should also be recognized that the Commission has proposed to afford applicants that filed by the cut-off date an opportunity to amend their applications to conform to any new requirements. See NPRM, ¶ 18; Public Notice 6 FCC Rcd 2083, 2084 (1991). Once such amended applications are filed, there may be no mutually exclusive applications among the bona fide applicants. See HITN v. FCC, 865 F.2d at 1294-95.

MSS spectrum sharing as a reasonable accommodation of competing MSS interests. However, certain provisions of the Commission's proposal must be modified, not only to make the plan acceptable as a licensing policy, but also to make it work for delivery of MSS by LEO systems.

A. The Proposed CDMA-TDMA Spectrum Division Is Workable.

Assuming the modifications outlined in the following sections are incorporated into the licensing plan, LQP could accept the Commission's proposal to split the L-band frequencies to assign 11.35 MHz for CDMA technology and 5.15 MHz for TDMA. NPRM, ¶ 32. LQP also could support the proposal to assign the pending CDMA LEO systems the designated 11.35 MHz segment in L-band MHz on a shared basis.¹⁸ Id. Moreover, a system should be licensed to operate over the entire bandwidth assigned to a technology, as set forth in the plan. NPRM, ¶ 36.

As discussed below, however, to make this plan workable, three changes are necessary: First, the Commission must review its treatment of S-band and assign the entire S-band to CDMA

¹⁸ Under the Commission's pending licensing proposals, at most four applicants would be eligible for assignment to the CDMA segment, and LQP's support for those proposals is based on that fact. If the Commission were to recede from its LEO constellation requirement or AMSC were to amend its application to conform acceptably to the LEO constellation requirement, or if the Commission were to provide for acceptance of applications from unspecified "new entrants," the premises underlying LQP's support for the aspects of the plan identified in the text would be vitiated, and in such circumstances, LQP reserves the right to modify its position.

systems on a shared basis as part of the spectrum-sharing plan adopted in the Report and Order.¹⁹ See text infra at § III.B.

Second, while LQP believes the 11.35/5.15 MHz spectrum division is workable, it cannot support the Commission's proposal to reduce "automatically" the CDMA segment to 8.25 MHz if only one CDMA system meets its milestones. See text infra at § III.C.

Third, LQP can support the Commission's proposed specific spectrum assignments of the 1610-1621.35 MHz segment for CDMA and the 1621.35-1626.5 MHz segment for TDMA. NPRM, ¶ 32. As the Commission recognizes, this division of spectrum includes in the CDMA segment the radioastronomy band and radionavigation band. NPRM, ¶¶ 49-58. These assignments of spectrum can only be made workable only if the Commission does not impose on CDMA systems stringent protection criteria for GLONASS receivers, as discussed fully below.²⁰

Assuming that the spectrum-sharing plan can be made workable as recommended by LQP, LQP agrees with the Commission that its adoption would allow the Commission to proceed expeditiously with licensing and to license all five LEO systems. See NPRM, ¶ 30.

¹⁹ The Commission proposed to assign only a "corresponding amount of 2.4 GHz downlink spectrum" to CDMA systems, and not to consider this assignment now but rather when the CDMA systems are licensed. NPRM, ¶ 37. These aspects of the Commission proposal are unacceptable.

²⁰ See NPRM, at 17 n.59; at 18 n.64.

B. CDMA Systems Must Have Access to the Entire S-Band.

Any spectrum sharing proposal, to be acceptable, must revise the treatment of the S-band contemplated in the NPRM. In the plan proposed, the Commission has assumed incorrectly that, if assigned to 11.35 MHz of L-band uplink, CDMA systems need only a "corresponding amount of 2.4 GHz downlink spectrum." NPRM, ¶ 37 (footnote omitted). No specific support is provided for this conclusion.²¹ In fact, as discussed in the Technical Appendix, the technical characteristics of L-band and S-band differ; therefore, rules and policies adopted for L-band are not transferable to S-band. There are sound technical reasons -- wholly ignored by the Commission's proposal -- why CDMA MSS licensees must have access to the entire S-band downlink allocation at 2483.5-2500 MHz.

1. There Are Multiple Technical Requirements For Full Availability of the S-Band to CDMA Systems.

As demonstrated in the Technical Appendix, Section 1.1, the CDMA systems must be authorized use of the entire S-band. The 16.5 MHz in the 2483.5-2500 MHz band provide the minimum amount of spectrum needed for commercial operation of these systems,

²¹ The S-band discussion was apparently premised on the assumption that S-band spectrum unused by a TDMA system operating in a portion of the L-band could be used to "avoid licensing in those portions of the 2.4 GHz band that are especially susceptible to inter-service interference." NPRM, ¶ 37.

whether one or four systems are operating. Indeed, the downlink spectrum and its associated PFD limits are the primary determinants of system capacity for LEO MSS systems.

CDMA LEO MSS systems are also subject to capacity constraints in the uplink spectrum caused by protection for radioastronomy, protection for GPS and GLONASS (even if limited to out-of-band emission limits as proposed by LQP), the proposed CDMA/TDMA band segmentation plan, and proposed band-sharing for CDMA systems. Nevertheless, on the uplink, CDMA LEO MSS systems have flexibility to manage a large amount of traffic because the number of uplink transmissions is not constrained by regulatory limits. Although individual user units are limited as to uplink e.i.r.p. density, the number of users uplinking is not limited and can be accommodated through beam management, assignment of frequencies, satellite diversity and other techniques.

In contrast, downlink capacity is restricted by PFD limits imposed by international and Commission regulations. These PFD values directly limit the number of users in the spectrum. Additionally, CDMA LEO MSS systems face constraints on downlink capacity because of sharing with other CDMA LEO MSS systems, the presence of other services within the band and adjacent to the band such as ITFS and ISM. Consequently, the full 16.5 MHz must be available on the downlink.

2. There Is No Legal Basis For Limiting Full Availability Of the S-Band to CDMA Systems.

The Commission's S-band proposal is flawed not only for technical reasons but also because it is inconsistent with the conclusions and recommendations of the Negotiated Rulemaking Committee.²² The Commission recognizes in the NPRM that it is obligated "to use to the maximum extent possible consistent with our legal obligations, the consensus of the [Negotiated Rulemaking] Committee as the basis for the rules we propose for notice and comment." NPRM, at 7, n.26; see 5 U.S.C. § 563(a)(7). The assumption underlying the conclusions and recommendations of NRC Informal Working Group 2 on interservice sharing and the majority and minority reports of Working Group 1 was that those CDMA systems which sought to use S-band downlinks would have access to the entire band in order to facilitate sharing among MSS systems and between MSS systems and fixed services. The Commission's S-band proposal is inconsistent with this

²² LQP further believes that the Commission's concerns that fixed services in the 2483.5-2500 MHz band and ITFS above 2500 MHz were not represented on the NRM Committee are misplaced and do not justify deferral of action on the development of rules for use by MSS of the 2483.5-2500 MHz band. First, adequate public notice of the opportunity to participate in the NRM Committee was given by the Commission, along with information concerning the frequency bands to be addressed. Secondly, the Commission was able to accommodate all expressed interests through membership on the Committee. All meetings were held publicly, following public notice. Fixed service interests have not indicated in this proceeding that they have concerns about sharing with MSS or that they believe their interests have not been considered.

conclusion, and the Commission has offered no justification in the NPRM for varying from the recommendations of the NRC.²³

During the NRC, all of the participants which considered S-band based their recommendations on the premise that CDMA operators would have access to the entire S-band spectrum.²⁴ Informal Working Group 2 examined specific issues related to interservice sharing, including sharing with existing services in the S-band downlink. See NRC Report, at § 3.1 (describing IWG-2 examination of Case Nos. 4, 11, 11R, 12, 12R, 13, 13R, 14, 14R, 15, 15R and 16). IWG-2 reached consensus and made recommendations on all but one of the S-band cases it considered.²⁵ These recommendations were adopted by the NRC. See NRC Report, at § 3.

²³ Indeed, elsewhere in the NPRM, in connection with "interservice sharing" issues, the Commission relies on the recommendations of the NRC to justify its rules for protection of radioastronomy and radionavigation services, and implies it is bound by these conclusions. See NPRM, ¶¶ 49-52 (radio-astronomy), ¶¶ 53-58 (radionavigation). No explanation of the inconsistency between this approach and that taken with respect to S-band is provided.

²⁴ See Majority Report, Attachment 1 to Annex 1, § 2.2, n.3 ("it is anticipated that CDMA systems transmitting downlinks in S-band would operate in that band on the basis of full band interference sharing"); Motorola Report, Attachment 2 to Annex 1, § 2.1, n.3 ("it is anticipated that CDMA systems transmitting downlinks in S-band would operate in that band on the basis of full band interference sharing").

²⁵ There was no consensus on issues related to Industrial, Scientific and Medical devices. But S-band segmentation was not considered an alternative to resolving any perceived problem. See NRC Report, § 3.4.9. In fact, International Footnote 752 requires MSS systems to accept interference from ISM devices, so "sharing" is not at issue. Further, LQP demonstrates in the Technical Appendix that there is no interference into or from MSS systems with respect to ISM.

None of Working Group 2's recommendations involved S-band segmentation as a possible solution to any interference issue. See IWG-2 Report, at § 5.0. There was not even a suggestion in the report of Working Group 2 that it would be useful or even appropriate to specify certain S-band frequencies for operations by terrestrial services to avoid interference into and from MSS systems.

The Commission's S-band proposal in the NPRM is thus inconsistent with and contrary to the recommendations adopted in the NRC Report. There is no support for the Commission's suggestion that it may be useful to reserve a segment of S-band for terrestrial systems. For these reasons (and the technical reasons discussed above), for any sharing proposal to become achievable, the entire S-band must be assigned for MSS downlinks.

C. CDMA Spectrum Should Not Be Reduced and Reassigned.

While LQP can support the Commission's proposal to segment L-band spectrum between TDMA (5.15 MHz) and CDMA (11.35 MHz) technologies as a reasonable accommodation of competing interests, and in the pursuit of prompt resolution of this proceeding, it cannot support the Commission's proposal "automatically" to split L-band 50/50 if only one CDMA system meets its implementation milestones. See NPRM, ¶ 33. This proposal is arbitrary, discriminates against CDMA applicants, is inconsistent with the Commission's interservice sharing proposals, and will seriously impair CDMA operations.

The Commission has proposed to assign the band at 1610-1621.35 MHz to CDMA operation and the band at 1621.35-1626.5 MHz to TDMA operation.²⁶ Automatic reduction of the CDMA segment to 8.25 MHz (1610-1618.25 MHz) would create a 3.1 MHz gap between the CDMA and TDMA band segments. The Commission suggests that this 3.1 MHz could be reassigned to the TDMA operator "upon a showing of need" or "could be made available to new entrants." NPRM, ¶ 34.

The Commission's "50/50" proposal does not take into account fundamental facts relevant to the proposed spectrum-sharing plan. LQP could accept the 11.35/5.15 MHz split for CDMA/TDMA to gain a prompt resolution of this proceeding -- but at the cost of a substantial reduction in capacity over using 16.5 MHz of L-band. LQP has never stated in any pleading (or otherwise) that 8.25 MHz was an acceptable bandwidth for its proposed operations. The Commission, in fact, misinterpreted the so-called Motorola/Loral proposal as "dividing the available spectrum equally among fully operational systems." NPRM, at 18 n.62. The Motorola/Loral proposal took into account interservice sharing, channelization and other parameters of the systems and spectrum in determining

²⁶ LQP recognizes that the Commission's CDMA-TDMA spectrum division is designed to accommodate competing interests and to avoid mutual exclusivity. However, there is a direct relationship between the amount of power needed for MSS uplink transmissions, the number of CDMA sharing systems, and the available bandwidth. As bandwidth is reduced, power in the handset must be increased due to increased spectrum traffic density and thus increased self-interference, causing more interference to other systems, thereby limiting the ability of multiple systems to share. The Commission cannot assume that CDMA sharing in 16.5 MHz is equivalent in 11.35 MHz or 7.5 MHz.

CDMA vs. TDMA bandwidth assignments. The Commission should not simply assume that an "8.25 MHz assignment should be sufficient to implement a viable system." NPRM, ¶ 33. A bandwidth of 11.35 MHz is potentially acceptable for CDMA; the Commission should not reduce it further.

Automatic CDMA reduction would effectuate exactly what the Commission states its plan should not do: warehouse spectrum. See NPRM, ¶ 35. That is, whether an existing TDMA operator or a new entrant applies to use the "excess" spectrum, the 3.1 MHz could lie fallow for years while the Commission processes the proposals for its use.

Even were processing expedited, the Commission's plan makes no sense because of the severe limitation which would be imposed on any new entrant.²⁷ On the one hand, if the new applicant were a CDMA system, then the Commission, in accordance with its spectrum-sharing plan, should restore the 3.1 MHz to the CDMA segment. The public interest is not served by a procedure which would reduce the CDMA segment one year and expand it to the original bandwidth the next, but, that is what the Commission's logic would require.

On the other hand, if the new entrant were a TDMA system, then the Commission would also have to impose a bidirectional user link (TDD) requirement on the system to conform to the

²⁷ As discussed in the text, LQP objects to any "reduction" in the CDMA segment. Accordingly, it recommends that the Commission not consider new entrants for the 1.6/2.4 GHz bands at this time.

technology of the existing TDMA system. The new system would have to operate with return direction downlinks in the L-band on a secondary basis because the Commission must assign the entire S-band to CDMA downlinks. Further, the TDD requirement would create the potential for greater interference into radioastronomy operations because of the proximity of the 3.1 MHz band to the 1610.6-1613.8 MHz band. And, the guard band required between two CDMA systems and a CDMA operator would effectively reduce the usable bandwidth to insignificance.

Worse, the "50/50" concept would severely penalize the CDMA system by changing the rules after its system had been constructed. The CDMA system would have designed and built its system with the full 11.35 MHz capability. Channel bandwidth, traffic loading strategies and many other aspects of systems design will have assumed the use of the full 11.35 MHz bandwidth, regardless of whether one or more systems becomes operational. Later, only because some other CDMA system did not meet construction milestones, the first system would find itself forcibly and substantially altered.

Moreover, to the extent the "50/50" concept effectively cedes 3.1 MHz to Motorola, it cannot be justified. The Commission has already found that Motorola can "successfully operate on 5.25 MHz of bandwidth" and that "as little as 3.3 MHz may be sufficient to accommodate Motorola."²⁸ NPRM, ¶ 31. In

²⁸ The Commission's proposal (NPRM, ¶ 33) that the CDMA spectrum reduction would occur "without hearing" suggests that the Commission has prejudged a very complex issue (as discussed

contrast, the Commission has made no finding as to the spectrum requirements of a single CDMA system, nor has it concluded that a TDMA system could use the 3.1 MHz so-called "excess" more efficiently and effectively than a CDMA system.

Indeed, reduction of the CDMA band segment to create this warehoused 3.1 MHz segment could cripple CDMA operations because of the interservice sharing requirements in the CDMA portion of the spectrum. As the Commission recognizes, the lower 6 MHz of CDMA spectrum is not as readily available for MSS use as the 5.15 MHz designated for TDMA. See NPRM, ¶¶ 49-58. Access to 11.35 MHz of spectrum yields 7.55 MHz above the radioastronomy band. Reducing the spectrum by 3.1 MHz "automatically" limits the CDMA system to 4.45 MHz above the radioastronomy coordination band. As explained in the Technical Appendix, it is necessary for MSS systems operating in the lower part of L-band to have access to frequencies at least 3 MHz above 1613.8 MHz in order to achieve coordination with radioastronomy protection zones.²⁹ See Tech. App. at § 2.1. The Commission has provided no justification at all for thus impairing the flexibility of a single CDMA system in achieving required coordination.

in the text) and yet, it has made no technical or other findings justifying its reasoning.

²⁹ The Commission's current band division provides CDMA licensees with 5.35 MHz above GLONASS operations in the 1610-1616 MHz band; reducing the segment would provide only 2.25 MHz above 1616 MHz. The Commission's concern regarding the usefulness of this spectrum, see NPRM, at 17 n.59, is inconsistent with its suggestion that it is feasible to place CDMA operations almost solely in spectrum shared by radionavigation services.

Systems, such as GLOBALSTAR, which are already financed and will be proceeding as rapidly as possibly to construct, launch and initiate service, should not be penalized twice for the Commission's uplink sharing scenario. The first set of constraints and penalties are those that will be required to assure coordination in a full-band sharing scenario. These constraints LQP is willing to assume, in order to allow the Commission to proceed to adoption of licensing and service rules and the issuance of licenses to qualified licensees, but a second set of constraints reducing otherwise available spectrum would be unacceptable.

Reducing the CDMA spectrum by another 3.1 MHz would unfairly discriminate against CDMA operators in comparison with the Commission's provision of more than ample spectrum to Motorola. Given that the Commission has ensured the "successful" operation of Motorola with 5.15 MHz of "clean" spectrum, any "automatic" reduction in CDMA spectrum must be rejected and the 11.35/5.15 MHz spectrum division retained as long as there is at least one CDMA and one TDMA system meeting their construction milestones.

D. The Commission Must Require U.S. MSS Systems to Commence Intersystem Coordination Immediately.

The Commission's proposal does not include procedures for coordinating among U.S.-licensed MSS systems. Indeed, the only discussion concerning intersystem coordination states: "Any in-orbit CDMA system will be required to operate compatibly with any newly launched CDMA system." NPRM, ¶ 32. For several reasons,

this omission in the Commission's proposed spectrum-sharing plan must be filled.

First and most importantly, the Commission should adopt a policy that CDMA-CDMA coordination and CDMA-TDMA coordination must be initiated immediately. In fact, coordination should begin when the Report and Order in this proceeding is issued so that operators may take advantage of the preparation of system amendments for the coordination process. This would reduce coordination time and thereby facilitate bringing service to the public sooner. In any event, the Commission's above-quoted statement must be clarified to reflect that the coordination process for sharing must be completed before the MSS systems are launched and become operational.

With respect to any coordination, the Commission must recognize that CDMA-CDMA and CDMA-TDMA coordination is an on-going process. Coordination between in-orbit and newly-launched systems must be initiated before launch of either system. The MSS systems cannot be constructed, much less operated, without an exchange of information and coordination in L-band and S-band. Because some MSS systems, such as Globalstar, are ready to commence construction,³⁰ it is critical not to lose any time in establishing the sharing criteria which will be used to coordinate the U.S. systems.

³⁰ LQP filed a Request for Waiver of Section 319(d) on April 1, 1994. Motorola filed a similar request on December 23, 1993.